The Macdonald Journal

JULY-AUGUST 1981

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JULY-AUGUST 1981

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In This Issue

Cover: A selection of photos of Convocation 1981 showing, clockwise, some graduates watching their classmates receive their degrees; Chairman of the Board of Governors Chief Judge Alan B. Gold, left, congratulating Dr. A.C. Blackwood on being made an Emeritus Professor; the piper leads the processional; Dr. Magnus Pyke, centre, receiving an honorary degree from Chancellor Conrad F. Harrington, left, assisted by Stephen Olive, Registrar, and members of the Gold Key Society followed by Chancellor Harrington and Principal David L. Johnston, right, and other members of the platform party.

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Journal Jottings

The July-August Journal has taken on a somewhat traditional appearance over the past few years. It is always a pleasure to share in the scholastic achievements of the students by highlighting Convocation. Many of the graduates listed will be known by our readers. Their towns and cities, provinces, and, indeed, countries of origin point out the varied regions and backgrounds of the young people who choose Mac as an educational springboard. Three Diploma students who are listed also wrote for this issue. May I say that I was enthusiastic when it was first suggested that an article for the Journal be undertaken as part of a class project for one of the Diploma courses. My hopes dimmed somewhat when the three students came to see me one day with some sheets of paper on which appeared something rather resembling the efforts of an agile chicken let loose to wander at will after having stepped into an ink well. They requested immediate criticism and suggestions as the class presentation was the following day. Being attuned to the agonies of procrastination, I gave what assistance I could. The students, I believe, worked through to the wee hours of the night and the next day, jeans and chicken marks discarded, presented a fine effort before their peers and the Diploma staff. My enthusiasm was restored. Dr. A.C. Blackwood, Professor of Microbiology and former Dean and Vice Principal, was made an Emeritus Professor at Convocation, and we are delighted to share with our readers a few of his thoughts on leaving Macdonald. His Editorial may be found on the next page. To complete the Convocation package we publish the Convocation Address by Dr. Magnus Pyke, who received an Honorary Degree. The 70th Anniversary of the Quebec Women's Institutes was celebrated in January in Dunham, the site of the first meeting, and by delegates and visitors at this year's Annual Convention. A selection of photos of Convocation appears in this issue. Many of the needs and concerns that led to the birth of this organization have changed or been rectified; however, in our ever-changing society new needs and new concerns will always present a challenge and a need for women who wish to work for "Home and Country." And when the work is done, there is the most important factor of all: the comfort and sustaining strength that comes from good fellowship. Happy 70th and many happy returns.

Hazel M. Clarke

Editorial

Macdonald College: A Reminiscence

Twenty-four years ago when I first joined the Department of Agricultural Bacteriology in the Faculty of Agriculture, Macdonald College had two years previously celebrated the 50th anniversary of its founding by Sir William Macdonald. For most of those 50 years Macdonald College was the dominant voice in agricultural development in the province and an educational pioneer, especially as the sole Canadian source of training graduate students for the Ph.D. Their influence on Canadian agriculture was outstanding. In spite of this record, 25 years ago the Faculty were few in number. The funding of both undergraduate and graduate programs was minimal, and the number of undergraduate students was not sufficient to supply the demands of the agricultural industry. However, the spirit at Macdonald College transcended difficulties. Both the Faculty and the students belonged in a very real sense to the Mac "family" and took great pride in their academic and social activities. I found the students were a joy to teach and a pleasure to follow in their future successes. In the next decade McGill and other Universities grew at a rapid rate and different pressures affected the Faculty. To cope with increased funding for the increased numbers of graduate students more space, more equipment, and more staff were required. These were provided as much as possible, but our sister institution, the Faculty of Education, with a dramatically increased enrolment, had its desperate need for more facilities provided on the downtown campus in the early seventies. The future of the Faculty was in doubt and the forced sharing of the Campus with the CEGEP (John Abbott College) did not help calm the emotional trauma. We are truly indebted to our friends in the community who came forward at that time with their moral and financial support and, especially, to Mr. David Stewart, our white knight in times of need.

Where are we now? The Faculty has more students in courses than our most optimistic projections; not only more, but a different community, with about equal numbers of male and female (a long way from the 5:1 ratio that so delighted the boys in the 50s). A different community also with about half the students with a francophone background. The academic ambitions of these students has placed heavy pressure on the teaching abilities of our staff, but their excellent academic progress makes the situation a real pleasure. The development of better transportation facilities over the years along with an increased standard of living has meant that many of the students and staff do not live on the Campus. The old "family" feeling has changed but the students are very active in social and athletic affairs and the staff is supporting their Faculty Club as never before; the spirit of Macdonald has changed but not diminished.

I am proud that 24 years ago I joined Macdonald College. It gave me, and others, opportunities to develop and grow that are not found in larger and more stable scientific communities. Being part of a university is like being on a roller coaster, always on the move, never sure whether you're going up or down, never certain who is running the machinery but hoping for a tranquil, peaceful flight somewhere along your journey. It never comes. I feel fortunate to have belonged to a great university, McGill, especially as a member of the "Mac" family. Both will forever require and deserve our support.

Dr. A.C. Blackwood
Emeritus Professor
Department of Microbiology.

In keeping with our policy of freedom of expression, the opinions expressed are those of the author's and not necessarily of the Journal.

In Memoriam: E. Melville DuPorte
24. X. 1891 — 31. VII. 1981

"When the heart is overflowing, speech does not flow readily, but I must try to express, however inadequately, on behalf of my colleagues and myself, indeed for all of us, our very deep and sincere appreciation of our late friend and companion, Ernest Melville DuPorte." These words are paraphrased from what he himself said on a happier occasion in 1957 when he received, on behalf of 137 of his former students, a retirement gift which enabled him and Mrs. DuPorte to travel from coast to coast to visit them and their laboratories, wherever they were in Canada.

This unique tribute was some small measure of the love and affection with which he was regarded by all those who knew him nearly a quarter of a century ago — about a year before I first had the privilege of knowing him personally.

Melville DuPorte was, above all, a scholar and a gentleman, a rare combination in any age. He had high principles and set high standards for himself and others, but he was ever fair in his judgment and kindly in his attitude towards those less gifted than himself.

Melville DuPorte was born on the 24th of October, 1891, on the West Indian island of Nevis. His childhood was a happy one and, at a very early age, he developed a keen interest in natural history. After an outstanding career at St. Kitts-Nevis Grammar School in Basseterre, St. Kitts, he was, in 1910, awarded a scholarship by the Legislative Council of St. Kitts-Nevis to attend university. He then decided to devote his life to the study of zoology and, though he had necessary entrance qualifications for the University of London, he chose, influenced by the favourable comments of one of his teachers, to enrol at Macdonald College of McGill University, which by then had not yet produced its first baccalaureate. Such was his enthusiasm for outdoor activities that one of his reasons for coming to Macdonald was that he hoped to in-

dulge in one of his favourite sports, horseback riding. Perhaps his earliest disappointment, after arriving in Canada in the autumn of 1910, was to discover that Quebec was not a region where cowboys roamed the range, and he had to settle later for golf, for which he also developed an avid enthusiasm and won many trophies. His indoor activities included bookbinding and the making and operation of hand puppets, at both of which he was very skilled. His performances were much in demand.

From his earliest days at Macdonald College he was always popular with students and staff alike. His quiet sense of fun was always with him and endeared him to all from the time of his undergraduate initiation. Then, on being thrown ceremonially, but unceremoniously, into the men's swimming pool, he turned the tables on his tormentors by swimming under water to the other end of the pool and remaining submerged until, thinking him drowned, they leapt in fully clothed to rescue him. A day or two before he died he related the story of earlier times when the train would stop anywhere along the line, if hailed. He was out collecting insects near Baie d'Urfé when his hat blew off and, as he caught it deftly in mid-air, a passing train duly stopped to enable him to embark. Melville was too much of a gentleman to relate the exchange that then ensued between the conductor and himself, but the twinkle in his eye left no doubt that the former had been less than polite. We know that Melville could not possibly have been so, for he was never known to raise his voice in anger or even in vexation.

He had his worries and disappointments during his long life but was too gentlemanly to give vent to his feelings, and such was the respect, affection, and love accorded to him by his friends and colleagues and, above all by his wife Peggy whom he married in 1937, that these outweighed all other considerations and, outwardly, he was the most contented person I ever knew.

Academically, Melville DuPorte was one of the most brilliant students that Macdonald has produced. He completed his four-year B.S.A. course in three years, heading his class, to graduate, in 1913, with an unheard of overall final average of 94 per cent, which included to him, an abysmal performance in Bacteriology for which he received a mere 75 per cent! Others did not share his view; when a junior teaching position was offered to him after graduation it was in Bacteriology as well as Biology (there was no Entomology Department in those days).

In a report to the Administration of St. Kitts-Nevis, in 1913, Principal F.C. Harrison of Macdonald College wrote: "DuPorte intends staying here for a few months to do some entomological work. . ." This must be the understatement of the century, for he remained active in research and as a member of the Macdonald College Faculty until 1980. He was the first graduate of Macdonald College to obtain his M.Sc. (in 1914), and his Ph.D. (in 1921), both through the Department of Zoology at McGill. Thereafter he progressed in due time to Full and Post-Retirement Professor of Entomology and then to Emeritus Professor of Entomology and Plant Pathology, collecting numerous scientific honours and awards on the way, culminating in an honorary Doctorate of Science from Carleton University in 1963. Other honours, such as the recently created Fellowship of the Entomological Society of Canada (the senior national Canadian scientific society) in 1977, came later.

He was an outstanding research worker in many fields (of which insect morphology was but the most widely known), but his teaching and administrative responsibilities were heavy, and he, in fact, carried the main weight of the Entomology Department for many years before officially becoming its Chairman in 1955. Nevertheless, his contribution to research was very considerable, though his modesty did not permit his appending his name as co-author to the numerous publications by the graduate students whom he directed.

It is as a brilliant teacher that he is most widely remembered for he influenced the lives of generations of Macdonald students who were not entomologically inclined. He conducted many courses other than those in Entomology and the formidable Zoology 220 — including Genetics and Parasitology. The latter was especially important to him and to the University as a whole as it was his initiative and groundwork that led to the establishment of the Institute of Parasitology at Macdonald College in 1932. His high standards were not only infectious but influential. In 1932-33, when the University decreed that the new B.Sc. Agr.), which replaced the former B.S.A. degree, was instituted, only *his* courses in the Faculty of Agriculture were deemed to meet the required standards; all others had to be upgraded. From that time forward the reputation of Macdonald College has remained enviably high.

Besides being an eminent zoologist, he was no mean mathemathician and his command of English was exemplary. In the words of the late Professor Frank Morrison:

"His English was impeccable,
His knowledge knew no bounds.
As Melville stood and stroked his chin,
All pens made scratching sounds."

I shall conclude with a few further words of Frank Morrison, also writ-

(Continued on Page 14)

Intermittent Lighting Programs for Laying Hens

by Professor Paul C. Lague
Department of Animal Science

Refinements in management techniques of laying flocks normally result in an increased income for the producer. One method that holds good potential is the utilization of intermittent lighting programs in light-tight houses. It is common practice to place laying flocks under 14 to 16 hours of light daily for most of the laying period, avoiding any reduction in the lighting period in order to prevent a decrease in productivity. However, recent investigations by van Tienhoven and Ostrander at Cornell University have shown that lights can be turned off during part of the "lighting" period, since the early portion of the lighting period has initiated an irreversible physiological response in the birds. In simpler words, hens, as well as many species of wild birds, are sexually stimulated by lighting schedules which comprise more than one period of illumination daily (i.e. intermittent photoperiods), inasmuch as the lights are turned on at critical times of the daily cycle of the birds. Needless to say, not all of these critical times have yet been determined.

Reducing the number of hours of illumination will, in fact, bring about a small saving for the producer in electricity and light bulb costs. A logical question arises, however: "Is this the only savings I will make and will my hens perform at least as well (feed efficiency, egg size, etc.) as those placed under 14 to 16 hours of light?". To answer this question, since no data were available on large numbers of hens and on complete laying periods, two experiments were conducted at Macdonald using two strains of hens (DeKalb, Hi-Sex) purchased from commercial hatcheries in Quebec.

All hens were debeaked and received various vaccines (Marek's, Newcastle, bronchitis, laryngotracheitis). They were raised under a limited lighting schedule. In the first experiment, the pullets were purchased "ready-to-lay" while, in the second, they were raised from day-old in our brooding facilities. All hens were housed at 20 weeks of age, 3 hens/cage (30.5 cm x 40.6 cm; 12" x 16"), in light-tight pens, each holding 32 cages. Each lighting treatment was replicated once. Feed (18 per cent protein) and water were available *ad libitum*.

The lighting treatments were the following: 14L:10D (control) and three intermittent schedules: 1) 8L:10D:2L:4D; 2) 2L:12D:2L:8D; 3) 9L:3D:3L:9D.

Lighting treatments were not started at the same age in the two experiments. In the first one, experimental lighting started at 26 weeks of age, while in the second, at 22 weeks. As it was not known whether the experimental lighting treatments would initiate laying in pullets, the birds in the first experiment were first exposed to 11 hours of light for two weeks and 12 hours of light for the next four weeks following their placement in cages. In the second experiment, the pullets were maintained under 8 hours of light for two weeks following their transfer to cages. Hence, the laying period in the first experiment was between the 26th to 70th week of age (11 periods of 28 days each) while, in the second, it was between the 22nd to 74th week of age (13 periods of 28 days each). Eggs collected on the last two days of a 28-day period were weighed and classified in order to determine the effects of the treatments on these parameters.

Results

Tables 1 and 2 summarize the data obtained in the two experiments. To simplify the presentation, the data were averaged over strain, as in the two strains, the experimental groups showed the same tendency over the control group, nevertheless, there were differences in the performances between the two strains.

Mortality was lower with the intermittent light schedules in the first experiment (making the proper correction for an accidental loss of hens as explained in the footnote) but, for unexplained reasons, it was either equal or superior for the intermittent light schedules in the second experiment. In both experiments, mortality occurred without a specific pattern during egg laying.

Egg production (hen-day) was superior with the intermittent lighting schedules in both experiments, some of these differences being statistically different from control values. Associated with this higher hen-day egg production in the intermittent lighting programs, one also observes a better feed efficiency with the sole exception of treatment 2L:12D:2L:8D in the second experiment.

Egg weight was increased under the intermittent lighting schedules in both experiments, more so with the first two intermittent lighting treatments than with the third. This

egg weight increase was associated with a marked decrease in small and medium eggs, hence with an increase in extra large eggs. This effect is a very desirable one due to substantial egg price differences between these categories.

Table 3 summarizes the translation of the "laboratory" results obtained in the two experiments into economical parameters. In these calculations, for 10,000 hens, egg production was arrived at by assuming a random mortality throughout the laying period (yielding the mean number of hens for the laying period) in order to convert hen-day production into hen-housed production. Values shown in Tables 1 and 2 were then used in these calculations to arrive at the number of dozen of eggs produced and the quantity of feed consumed to produced them. The reader is left with the mental task to calculate the increased income for the additional number of dozen of eggs produced with the first and third intermittent lighting treatments as well as to calculate some of the savings in feed consumption. More refined calculations could be presented for the increased income stemming from more extra large and large eggs produced. However, the differences brought about by the first and third intermittent lighting treatments should be enough incentive by themselves to bring to the attention of the egg producer the likely advantages of utilizing intermittent lighting for his flocks. The second intermittent lighting treatment (2L:12D:2L:8D) is not recommendable yet as it gave good results the first year, but not the second. This treatment is a drastic departure from the present commercial practice of 14 to 16 hours of light and should be looked at only after more thorough experimentation. Nonetheless, it shows how little light can affect physiological responses in the birds, when this light is given at a sensitive moment in the daily cycle of the hen.

Table 1. Effects of intermittent lighting programs on the productivity of White Leghorn hens. First experiment: 11 x 28-day periods starting at 26 weeks of age. Data on two strains of birds, 96 hens/strain/lighting schedule.

	Lighting Schedule			
Parameter	14L:10D	8L:10D 2L: 4D	2L:12D 2L: 8D	9L:3D 3L:9D
% Mortality	9.9	8.3	5.8	9.9(1)
% Hen-Day Production	75.4^{bc*}	77.0^{a}	77.0^{a}	76.0^{ab}
Feed/Doz. Eggs, kg	1.78^{a}	1.69^{b}	1.66^{b}	1.71^{ab}
Mean Egg Wt., g	57.5^{b}	58.9^{a}	58.0^{b}	57.6^{b}

* In a row, different superscript indicates a significant difference at $P \leq 0.05$.
(1) Seven hens of the same strain out of 48 died during a power failure in one pen. With this correction, the mean would read 6.3 instead of 9.9%.

Table 2. Effects of intermittent programs on the productivity of White Leghorn hens. Second experiment: 13 x 28-day periods starting at 22 weeks of age. Data on two strains of birds, 96 hens/strain/lighting schedule.

	Lighting Schedule			
Parameter	14L:10D	8L:10D 2L: 4D	2L:12D 2L: 8D	9L:3D 3L:9D
% Mortality(1)	15.6	15.6	22.9	22.4
% Hen-Day Production	67.1^{b}	68.0^{b}	68.6^{b}	72.5^{a}
Feed/Doz. Eggs, kg	2.28^{a}	2.25^{a}	2.33^{a}	2.07^{b}
Mean Egg Wt., g	59.9^{c}	61.4^{ab}	62.0^{a}	59.9^{c}

* In a row, different superscript indicates a significant difference at $P \leq 0.05$.
(1) Mortality was 6 to 14% more in one of the strains.

Table 3. Total egg production and feed consumed by a hypothetical flock of 10,000 hens, based on data presented in Tables 1 and 2.

	1st Experiment			2nd Experiment		
Lighting Schedule	Mean No. Hens	No. Dozen '000	Feed Consumed T	Mean No. Hens	No. Dozen	Feed Consumed T
14L:10D	9505	183,9	327,4	9220	187,6	427,9
8L:10D: 2L: 4D	9585	189,4	320,1	9220	190,2	427,9
2L:12D 2L: 8D	9710	191,9	318,6	8855	184,3	429,3
9L: 3D: 3L: 9D	9505(1)	185,4	317,1	8880	195,3	404,2

(1) Mortality was not corrected for the accidental loss of hens in this treatment.

Summary

Intermittent lighting programs can be applied for commercial egg production when the hens are kept in a windowless house rendered totally light proof. These programs are bound to result in some savings in energy costs as well as substantial increases in the productivity of the flocks. Intermittent lighting programs ought to be considered by the producer as a refinement in his already excellent management system.

Further experimentations on lighting programs are currently being conducted in various institutions, mostly on the advantages of using cycles having more than 24 hours (e.g. 28-hour cycles) during the beginning of lay in order to increase egg size, by favouring a prolonged sojourn of the egg in the oviduct or during the last part of the laying period to improve egg and egg shell quality. Acquisition of this data is a long process as a full laying period must be evaluated.

References

van Tienhoven, A. and C. E. Ostrander. 1973. The effect of interruption of the dark period at different intervals on egg production and shell breaking strength. Poultry Science 52: 998-1001.

van Tienhoven, A. and C. E. Ostrander. 1976. Short total photoperiods and egg production of White Leghorns. Poultry Science 55: 1361-1364.

DIPLOMA PROGRAM

SUMMER FARM PRACTICE

by Clancy Annesley, Scott Davidson, and Stephen Hindrichs, Diploma II. Edited by Jim Currie, Assistant Director, Farm Practice

If possible, students are placed in the kind of farming operation that interests them. Last summer Guy Bacon worked on a large goat farm.

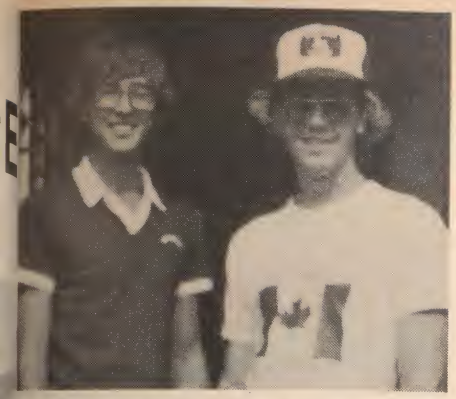
The Diploma Program in Agriculture taught at Macdonald now bears little resemblance to the same program of a decade ago. Certainly the objectives are the same: to train young people to become top level farm owners or managers. Some of the subject names are the same and even some of the instructors may be the same, but there the similarity ends. Rapid changes within the industry required that the Program change to keep pace. Students have to have farm experience before they even enter the Program, and they have to be determined to make a career in agriculture when they leave. Subject matter has been arranged to stress the technical aspects of farming and emphasize the management of the farm as a business venture as well as a way of life. The biggest change in the Program, however, is that the students are required to work on farms for the two summers that they are in the Program. They are placed on farms after both the first and the second year of formal study at Macdonald for a 15-week period of practical experience.

Much emphasis and value is placed on this 15-week term of farm work. The student is evaluated on his performance and a successful evaluation contributes 15 credits toward completion of the entire program. The evaluation consists of visits by Diploma staff to discuss the student's progress with the farmer and with the student and, for First Year students, exams at the end of the summer. The evaluation is based on the student's general performance, attitude, and his or her ability to observe and to become integrated into the farm operation. The backbone of the Summer Farm Practice is, of course, the Quebec farmer. Without the active participation and interest of Quebec farmers this practical experience would be impossible to accomplish. It is up to each farmer to provide the guidance, the patience, the honesty, and the openness to discuss his entire business with the student. He must also supply room and board and accept another person onto the farm as more than just a hired hand. Obviously, some farmers are more capable than others of being "teaching farmers" and herein lies a major problem. Not all students get the same experience and some feel that they have been shortchanged as compared to others. However, it would be a sad world if we all acted the same, and the students are encouraged to get as much out of the experience — whether good or bad — as they can.

To help the students get as much experience as possible in their chosen field, a large number of farmers covering a real cross-section of Quebec agriculture have been gathered into the Program over the years. Through word of mouth and some hard searching, students now can work with dairy, beef, or sheep, with vegetables or cash crops, or in orchards or ornamental horticulture. The students are interviewed to determine what kind of farm they would like; then they are assigned to a farm of that type somewhere in Quebec. There are, in some cases, a shortage of farms — such as hog operations — and, in these cases, the students have to accept a second choice in, if possible, a closely related field.

Ideally, the Summer Farm Practice can be a two-way communication wherein both the student and the farmer benefit from each other's knowledge. The student gains practical knowledge from the farmer's years of experience while the farmer can learn from the student's fresh outlook and newly acquired technical knowledge. There are many examples of this happening. In one recent case, a young girl was working in the Clarenceville area adding to a rather limited practical knowledge with the help of a very good dairy farmer. During the summer she used the information gained in the dairy production course to formulate a new feed ration for the herd which helped to increase the herd average. This same student

This article, an assignment in Extension Methods, in the Diploma Program, was written especially for the Journal.



tudents often become good friends at Mac; as well, they develop close relationships with
ne farm families. Left, Andy Geleynse, who is working on Steve Brus's dairy farm in
tanstead, compares notes with Clancy Annesley of Lennoxville, who is working on the
ollege Farm. They met for this photo at Lorne Butler's dairy farm near Lennoxville where
ndy worked last summer. Right, Kelly Finlan from Shawville works on a dairy farm in
rmstown.

ome students prefer working with animals, others with plants. Alexander Shedov is seen
orking in a tomato greenhouse in St. Louis de Gonzague.

elped the farmer determine
hether or not it would be profitable
or him to raise his bull calves for
eal. This also turned out to be suc-
essful. In another case, a student
ook what he had learned in the
airy course to help a Huntingdon
armer better understand his milk
heque.

Whether the student is from a farm
ackground or from the city, there
re certainly many things to learn.
or those students who are familiar
ith the daily activities at home, it is
n opportunity to see how another
ellow does the job and if it would
ork that way at home. For those
tudents with limited experience,
here is a chance to improve their
ndamental practical skills. All
hose long hours of lectures and
tudies during the fall and winter
emesters finally pay off when the
tudent sees what has been learned
the classroom put into practice.
uddenly, many things that were on-
concepts and thus rather difficult
grasp become reality and
verything seems to fall into place.
he basic arts of proper tillage prac-
tice and forage harvesting that are touched on in class cannot be grasped until they are actually practiced.

It sometimes happens that for one reason or another the student and the farmer cannot get along with each other. If the problem cannot be solved, the student can be placed on another farm. Students, however, are encouraged to do their best to get along with the farm family since this part of rural living is a vital part of becoming a good farmer. Students who have taken the Diploma Program have often commented on how valuable their experience was in terms of having to live with other people in their environment. Often the students have made good friends with the family they lived with or with other people they met during the summer. This can sometimes have future benefits in the way of jobs and contacts with people in the agricultural sector. Occasionally a farmer will hire a student on a permanent basis or refer him/her to someone else for future employment. This aspect of meeting people is very important and that is why students are not usually placed in their home region. They have the chance to meet new people and make friends all around the province. This can further be enhanced by encouraging a student to participate in community organized activities such as the local fairs. For example, last summer's Quebec Young Farmers' Calf Rally was held in Shawville, and all the students working in that area were actively involved, with some students participating in organizing the event and others actually showing calves. For many students the exposure to the francophone environment has been very beneficial. Some students start the summer knowing only a minimal amount of French but, after having worked for a French-speaking farmer, they have become quite bilingual.

The student's responsibility on the farm during the summer depends on his/her ability and the farmer's opinion of that ability. The student could be given varying degrees of responsibility — from carrying on the duties of a hired hand to making decisions in the absence of the farmer. Some students have been left alone to carry out the farm duties which gives them a taste of what running a farm is like, whereas others work closely with the farmer where they can benefit from his experience and knowledge. Examples of where students have held significant responsibility include a beef and a sheep farm. In these instances, the owners where part-time farmers running full-scale operations.Thus the students were left in charge of the daily routines and actively participated in management decisions.

In summary, the Summer Farm Practice is an integral part of the Diploma Program. It is a direct link between the theory acquired during lecture time and the practical knowledge required to successfully operate a farm business. It is the opinion of the students of the Program that the Summer Practice is one of the major advantages of this course at Macdonald, as opposed to other comparable programs offered by Macdonald's rivals!

CONVOCATION
JUNE 5, 1981

Emeritus Professor

Mr. Chairman of the Board: When Dr. Clark Blackwood joined the Faculty of Agriculture of McGill University in 1957 as Professor of Agricultural Bacteriology, and Chairman of the Department, he was in a way returning to his roots, for both his parents were raised in this province. During the quarter of a century that has since elapsed he has served his Department, the Faculty, and the University in many ways and always with the same sense of dedication.

Clark Blackwood did not start out to be a microbiologist for, after having attended Normal School in Calgary, he taught in Elementary School for two years. He then decided to further his education and went to the University of Alberta, from where he graduated with a B.Sc. in Agriculture, majoring in soils. Perhaps because he did not want to get his hands "dirty", he decided to continue his studies in bacteriology, which led him to obtain a Ph.D. from the University of Wisconsin in 1949.

The next eight years were spent at the Prairie Regional Laboratory, N.R.C. in Saskatoon, where he studied various aspects of carbohydrate metabolism in bacteria.

Clark Blackwood was lured from a comfortable research laboratory to the sometimes turbulent world of Academia to chair the Department of Agricultural Bacteriology upon the retirement of Professor P.H.H. Gray. During his tenure as Chairman, the Department expanded, staff was added, and the graduate program was strengthened. In order to reflect these changes and identify better the activities of the Department, in 1966, its name was changed from Agricultural Bacteriology to Microbiology. The impetus he gave to the Department during that time has carried on. The number of staff members has increased from two to six, and the number of graduate students has risen dramatically from two or three in 1957, to about 25 at this time. His own research did not suffer. He continued to study physiological aspects of bacteria fungi, and yeasts. He directed the graduate programs of some 31 M.Sc. and Ph.D. students and is senior author or co-author of 55 scientific publications.

Being Chairman of the Department of Microbiology did not prevent him from serving on many faculty committees. He also served in many capacities on the Faculty of Graduate Studies and Research and on Senate as elected representative from the Faculty of Agriculture and served on several of its committees.

His talents as organizer were again called upon in 1972 when he was appointed Dean of the Faculty of Agriculture and Vice-Principal, Macdonald College, perhaps at a time of its most troubled existence; its future being in doubt in the minds of some people. Through quiet, low-key diplomacy, for Clark is not a loud person, listening, reasoning, negotiating, planning, he was instrumental in directing the Faculty and the College into the new teaching and research quarters which we are enjoying and which are the envy of many.

Professor Blackwood has been recognized as a leader in the field of Agricultural education. He was elected the first Secretary-Treasurer of the newly formed Association of Faculties of Agriculture of Canada and served as its President for one year.

His talents as scientist and leader have been recognized by the honours and awards bestowed upon him. He was awarded the Centennial Medal of Canada in 1967, was elected Fellow of the Royal Society of Canada in 1968, was elected Honorary Member of the Société de Microbiologie de la Province de Québec in 1970, and was awarded the Queen's Jubilee Medal in 1977.

Mr. Chairman of the Board, Dr. Blackwood has served this Faculty, Macdonald, McGill and the community with great devotion. It is with great pleasure that I present to you and this Convocation Allister Clark Blackwood and ask you to confer upon him the status of Emeritus Professor of our Faculty and of the University.

Jean David
Professor of Horticulture
Associate Dean, Student Affairs and Public Relations.

Honorary Degree

Mr. Chancellor: It is my privilege to introduce to you, and to this Convocation, Dr. Magnus Pyke, a graduate of this University who over the intervening years has become a widely-acclaimed food scientist and nutritionist.

Dr. Pyke was born in London, England, and received his early education at St. Paul's School. He subsequently spent seven years in Canada, during which time he received from McGill University first the Diploma in Agriculture in 1929 and then the B.Sc. (Agr.) degree in 1933. Following his return to England, he obtained his Ph.D. from University College, London, in 1936.

Dr. Pyke began his professional career as chief chemist with the London firm called Vitamins Limited — an appropriate choice for a budding nutritionist. During World War II

ne served as principal scientific officer (nutrition) in the Scientific Advisers Division of the Ministry of Food. He was Nutrition Adviser in Vienna to the Allied Commission for Austria from 1945 to 1946, returning to the Ministry of Food from 1946 to 1948. In 1949, Dr. Pyke assumed the position of manager of the Glenochil Research Station in Menstrie, Scotland, where his particular concern was with the quality of manufactured foods. In 1973, he joined the British Association for the Advancement of Science, where he has served as secretary and chairman of council to the present time.

Dr. Pyke's early training in agriculture and chemistry has provided a sound basis for his intense interest over the years in nutrition and food science. He has been a strong and outspoken proponent of both of these fields, as attested to by his willingness to speak at meetings whether they be international, national, or quite local in origin and by his voluminous writings. The titles of some of his writings may provide some indication of the approach taken by Dr. Pyke to the task of enticing the public to become aware of the real facts about nutrition and food science — "Industrial Nutrition; Townsman's Food; Nothing Like Science; The Science Myth; What Scientists Are Up To: The Human Predicament; Man and Food; Food Glorious Food; Technological Eating; Success in Nutrition."

Both his spoken and written words have been characterized as being at least novel and more often than not provocative. As a consequence, Dr. Pyke is widely sought for radio and television performances. His strong desire to make the world of science more understandable has resulted in his giving of enthusiastic presentations which both fascinate and inform the listener.

Dr. Pyke's contributions to science over many years have been recognized by his professional colleagues in that he has been made a Fellow of the Royal Institute of Chemistry, a Fellow of the Institute of Food Science and Technology, a Fellow of the Institute of Biology, and a Fellow of the Royal Society of Edinburgh.

In recognition of his national and international service, Dr. Pyke was awarded the Order of the British Empire in 1978.

Mr. Chancellor, may I present to you, so that you may confer upon him the Degree of Doctor of Science, *honoris causa,* this distinguished scientist, honoured graduate of McGill University, and ardent advocate of a plentiful supply of food for mankind, Dr. Magnus Pyke.

L.E. Lloyd, Dean
Faculty of Agriculture

AGRICULTURAL SCIENCE AS LIBERAL EDUCATION

by Dr. Magnus Pyke, O.B.E., F.R.S.E.

The Shorter Oxford English Dictionary, a volume comprising 2513 pages, defines liberal as "pertaining to a free man" and points out that it was first used as an epithet for those arts and sciences that were worthy of a free man. Later, when applied to education, it implied general intellectual culture that was not narrowly technical or professional. Just such an education, indeed, that a great University such as McGill aims to provide. Looking back, as I have been doing since the responsibility of giving this address was laid upon me, over the period of nearly half a century since I first graduated in this place in 1933, it stuck me that I owed a debt of gratitude to Macdonald College and the Faculty of Agriculture where, while working to obtain a degree in agricultural science, I was thereby equipped with a liberal education.

To be ignorant is to be illiberal

For the last seven years I have spent a great deal of time and effort in trying to make plain the basic principles of science to ordinary people, many of whom had no understanding of what science is. The depth of ignorance of many members of the British public — and I have no doubt that there are ignorant Canadians too — who consider themselves to be educated people must be taken as a condemnation of the liberality of the education they receive. How can they be free men and women, no matter how well versed in history, modern languages, or law, if their minds move in darkness, unknowing of the true nature of the natural universe? A dramatic, even if not altogether untypical, example of the profundity of the public lack of understanding of physics and chemistry was shown when a recent correspondent to the *London Times* seriously proposed that the shortage of fuel to which the so-called "energy crisis" was allegedly due could be remedied by a greater use of "lemon power". This grotesque proposition was based on a report of a tiny electric motor which ran, it was said, for two weeks on the current generated by two metal strips, one of copper and one of zinc, inserted into a lemon. The total ignorance of electrochemistry, although its basis was elucidated 200 years ago, of the allegedly educated gentlemen at the *Times* was shown by the editor's recommendation that serious support should be given to the setting up of an official investigation by a governmental body of lemons as an annually renewable source of power. Clearly the long afternoons spent in the laboratories at Macdonald College separating groups of elements and wrestling with the intricacies of

physical chemistry laid an essential foundation of knowledge of the stuff of which the universe is made, without which no man or woman, whether he or she eventually comes to live as a practical farmer or food scientist or an urban citizen, can claim to be liberally educated.

A free man may usefully learn animal husbandry and dairying. Command over a practical art may come to provide a bulwark against destitution. But an understanding of biology — of botany and zoology — providing an insight into the varieties of living creatures with which we share this pleasant world, as chemistry and physics, must surely form a solid basis of liberal study. This I was given by the Faculty of Agriculture, and it has served me well over the years.

The humane biologist

It is true that, by reference to its etymology, a liberal education must be taken to mean the education of a free man. But as this term is construed further, the Shorter Oxford English Dictionary goes on to define it as the education of a gentleman. I would have preferred it to have been said that it was the education of a humane man or woman. Learning, as does the student of agricultural science, the husbandry of his flocks and herds, such an instruction teaches him to treat them with humanity. Nevertheless, since his learning is grounded on practical farming, he also learns to adopt a sensible approach to the problems about which he learns.

During recent years, it has become the received wisdom to challenge the advice given by God to our first parents (as set down in verses 28 and 29 of the first chapter of the Book of Genesis) "to be fruitful and multiply, and replenish the earth and subdue it; and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth". Indeed, in the United States, some thinkers have gone so far as to identify as equally heinous as "racism" the sin of "speciesism". This implies that the human species is no more important than any other animal kind and, rather than exterminating the smallpox virus from the face of the earth, we should defer to *its* rights, as many now do to the equal rights of seals to eat fish as of people to do so. So far, I have not heard of much support for the rights of fish to eat seals. Clearly, we want the liberally educated man or woman to be soft-hearted, but I should also like to see him or her reasonably hard-headed as well. I believe that the rational study of agriculture and food science can bring this about.

The bread of life

It behooves the humane citizen to take thought for the well-being of his fellow man. But for his kindly thoughts to be translated into effective action — in short, for him to do some practical good to his less fortunate neighbour — he needs to be clear-sighted enough to see the world as it is. It was Jonathon Swift who pointed out — having, no doubt, the educative importance of agricultural science in mind — "that whoever could make two ears of corn or two blades of grass to grow upon a spot of ground where only one grew before, would better deserve of mankind, and do more essential service to his country, than the whole race of politicians put together". To have been educated so as to be able to make not two but 200 ears of corn grow in place of the one is to have received a valuable education. Yet this is not enough. The history of the last 30 years show that egregious errors have been made often by conscientious and, as they have believed, well educated men and women who have joined that race of politicians in assessing the want of hungry communities for bread. The "starving millions" and the "world food crisis" have been phrases bandied about most often by well-meaning people but people lacking the rigour of an education such as that provided by agriculture and food science, the students of which are trained to define their terms and apply quantitative criteria to what they define. The starving population of a fertile country devastated by war is better served by the cessation of fighting and slaughter than by gifts of fertilizer or surplus dried skim milk. A non-existent "protein gap", once believed to exist by the Food and Agriculture Organization of the United Nations, whose members must surely have lacked a liberal education, once led to 10 years' travail and the expenditure of millions of dollars in technological effort to perfect "fish flour" to benefit impoverished communities in Central America who declined to eat it when it *was* perfected but who would have welcomed fish. A liberal education, involving rigorous study, to be sure, but not so narrowly vocational as to exclude a wider outlook and, it is to be hoped, some measure of common sense, might prevent such errors.

Beauty and the beast

Agricultural and food scientists must not neglect an understanding of the appropriate chemical inputs of the human body, for this is the basis of scientific nutrition. But they are also concerned — and concerned to a major degree — in providing food both that derived from the beasts of the field and from arable crops as well. During the course of a long life, much of it involved in food science, I have become increasingly struck by the predominant degree to which those working in this field are concerned with aesthetics, the perception of the beautiful. The business of agricultural scientists is to understand how to produce food, to be sure, but also to produce beautiful food, capable of touching the aesthetic susceptibilities of those who will then purchase and eat it. Canadian apples must not only be nourishing but, even more, they must be unblemished, rosy-cheeked and delightful to the palate. But the matter is even more subtle than this. Each year, the British, even in the confusion of their economic difficulties, spend some millions of pounds buying Canadian wheat. Why do they do this when their own fertile land can yield crops of wheat which would be the envy of any prairie farmer? They do it solely for aesthetic reasons. They sacrifice their wealth thus because it is seemly to them that their bread should possess a beautiful and uniform crumb structure, evenly perforated with tiny bubbles — visible only for that brief but precious moment as they raise the slice of toast to their lips — and free from disfiguring holes through which the morning

marmalade could ooze and drip on to the pin-striped trousers.

The aesthetic experience of prime beef; of bacon, streaky or Wiltshire; of wheat and flour graded to the tastes and purposes of those who come to Canada rightly dependent on their reliability, may be different in degree from what comes from great music, poetry, or literature, but it is valuable nevertheless. In our preoccupation with those who are poor and oppressed, let us not forget those many who can, even while facing the problems of the day, strive to live the good life. Neither let it be forgotten that even those who are in dire straits will nevertheless decline to eat fish flour, regardless of its protein content, if it fails to meet their aesthetic criteria of food fit for free men to eat.

Safe journey

The scientist is trained to determine the concentration of oxalic acid in rhubarb and to determine the amount of benzyl thiocyanate in cress. He is also qualified to access in quantitative terms the trace residues of insecticides on his crops. Outside the ambit of agriculture and dietetics, other scientists can measure to fine degrees of precision the hazards arising from the production of atomic power, as of other sources of energy, just as they can compute the danger of road travel compared with travel by air or rail. But why we need not only scientists capable of doing these things but also those, whether scientists or not, with a liberal education is twofold. Firstly, the analysis having been made, there is need for someone with a philosophical bent to judge — and this *is* a matter of judgment — whether the figures are worth bothering about. Would the concentration of oxalic acid in rhubarb justify rhubarb being banned? True, the reported mortality from rhubarb poisoning is exceedingly low, but there is a reference from the 1920s to the death of a man who ate the leaves — fried. And what about cress? The level of benzyl thiocyanate in cress is such that an ounce of cress is sufficient to kill two mice. That is why you never see two mice eating an ounce of cress. The liberally educated agricultural and food scientist, however, needs a higher level of judgment even than this, Death by poisoning, as by other means, is serious and should be avoided, but there are limits to the pursuit of safety in our journey through life otherwise no one would be a farmer, let alone a deep-sea fisherman. It has recently become clear that the level of apprehension in any community is only partly based on the actual measurable risk. It is also influenced by what people think about the danger. The fear of nuclear accidents is acute regardless of a generation of impeccable safety statistics; the hazards of coal mining, killing men every year and significantly raising the radiation load of the atmosphere when the coal is burnt, are ignored. Not only must the liberally educated agricultural and food scientist take into account these irrationalities of his fellow citizens and understand that he himself may share them, he must also, as an educated and responsible thinker (and it is the hallmark of his university that he should be such), consider the wider implications of his and their foibles. Apprehension about the dangers of miniscules traces of DDT in food — one of the exaggerated apprehensions of those who follow the fashion — led to the banning of DDT. In a few years, malaria, which had been virtually extinguished in Sri Lanka, a country economically dependent on its exports of tea to America, was claiming more than a million victims a year. How many Sri Lankans must die to save one golden eagle?

There is need today, in this world of high technology, for men and women whose education teaches them to reflect on the wider consequences of the actions they take.

FACULTY OF AGRICULTURE

DIPLOMA IN AGRICULTURE

Candidates presented by Professor N.C. Lawson, Director of the Diploma Course

ANNESLEY, Clancy Gordon, Lennoxville, P.Q., (Ralston-Purina Prize for Farm Project);
BACON, J.A. Guy, Montréal, P.Q.;
BLEHO, Michael, Beaconsfield, P.Q., Honours;
CAROLUS, Jeff, Beaconsfield, P.Q., Honours;
CONOLLY, Donna Mary, Pointe Claire, P.Q., Honours;
CUMMINGS, Keith, Ste-Anne de Bellevue, P.Q. Honours;
DAVIDSON, R. Scott, Sutton, P.Q.;
DEACON, Shelley, Waterville, P.Q., First Class Honours;
GELEYNSE, John Andrew, Dollard des Ormeaux, P.Q.;
GOLDFARB, Brahm, Town of Mount Royal, P.Q.;
GRUENEBERG, Andreas, Laval des Rapides, P.Q., First Class Honours;
HINDRICHS, Stephen Pery, St-Armand, P.Q., Honours;
HORNE, Steven O., Caughnawaga, P.Q., Honours;
JAQUITH, Barry, Macdonald College, P.Q., Honours;
JERRETT, Keith Malcolm, Montreal, P.Q.,Honours;
KENNEDY, Bruce, Kirkland, P.Q.:
LEE, Stephen, Cowansville, P.Q.;
MCNAUGHTON, Geoffrey Bradley, Bainsville, Ont., Honours;
MURRAY, Barry William, Pierrefonds, P.Q., First Class Honours;
PERKINS, Cliff A., Richmond, P.Q.,First Class Honours;
ROBINSON, Martha Helen, Montreal, P.Q., Honours;
SHEDOV, Alexander, Montréal, P.Q.;
SIMPSON, Brent Owen, Ormstown, P.Q., First Class Honours; Ministère de l'Agriculture, des Pêcheries et de l'alimentation du Québec Gold Medal;
TOLHURST, Brent D., Howick, P.Q.;
TUNMER, Gideon, Baie d'Urfé, P.Q., Honours;
TURCOTTE, Line, Ste. Anne de Bellevue, P.Q.;
VAN AGTMAEL, Ludo, Sabrevois, P.Q.;
WAINWRIGHT, Christopher James, Pincourt, P.Q.;
WHITE, Lindsay, St. Laurent, P.Q.;
YOUNGE, Rickey Walter John, Shawville, P.Q., First Class Honours.

BACHELOR OF SCIENCE IN FOOD SCIENCE

Candidates presented by Professor S.M. Weber, Director of the School of Food Science

● AGUZZI, Anna, Montreal, P.Q.,(Dietetics), First Class Honours, Governor General's Medal, University Alumnae Prize, University Scholar;
AWAN, Mahmood A., Pakistan, (Food Science);
● BINDER, Carin, Laval des Rapides, Laval, P.Q., (Dietetics), Honours;
CAMPEAU, Roseline, Ferme Neuve, P.Q.,(Food Administration), Honours;
CHARETTE, Diane, Chomedey, Laval, P.Q., (Consumer Services), Honours;
● CHUNG Woon Mui, Bramalea, Ont., (Food Science), First Class Honours, University Scholar;
● CONTRERAS ESCALANTE, Jose R., Tovar Merida, Venezuela, Major in Food Science (Food Chemistry Orientation);
DEUTSCH, Helene, St. Lambert, P.Q., (Food Science), Honours;
● DOYON, Lyne, Montreal North, P.Q., Major in Food Science (Food Chemistry Orientation);
● DUQUETTE, Francine, Montreal, P.Q., (Dietetics), Honours;
● FERRARO, Linda, Montreal, P.Q., (Dietetics), Honours;
● FOURNIER, Carole, Val Bélair, P.Q., (Dietetics);
FRENETTE, Jocelyne, Pointe-Aux-Trembles, P.Q., (Consumer Services), Honours;
● GAUTHIER, Sylvie, Ste-Thérèse, P.Q., (Dietetics);
● GAUVIN, Annick, Montreal North, P.Q., (Dietetics);
● GERVAIS-MORELLI, Janis, Rosemere, P.Q., (Dietetics), Honours;
● GERVAIS, Nicole, Montreal, P.Q., (Dietetics), Honours;
GIBEAU, Marie, Montreal, P.Q., (Dietetics), Honours;
● GROLEAU, Johanne, Pierrefonds, P.Q., (Dietetics), Honours;
● HANUSAIK, Nancy Anna, Lachine, P.Q., (Dietetics), Honours;
HEBERT, Carol Ann Marie, Sherbrooke, P.Q., (Food Admistration), First Class Honours, University Scholar;
● HOLLOWAY, Susan M., St. Lambert, P.Q., (Dietetics), Honours;
JOHNSON, Robert, Longueuil, P.Q., (Food Science);
KENNEY, Anne, Kirkland, P.Q., (Food Administration), Honours;
KHATCHIKIAN, Alice, Dollard des Ormeaux, P.Q., (Consumer Services), Honours;
KILBERTUS, Frances T., Montreal, P.Q., (Nutrition), First Class Honours, Harrison Prize, University Scholar;
● LAFRANCE, Adèle Marie, Pembrooke, Ont., (Dietetics);Honours;
LAM, Thi Thu Hong, Côte St. Luc, P.Q., (Food Administration);
● LORTIE, Lucie, Brossard, P.Q., (Dietetics), Honours;
MAKSINS, Anda, Toronto, Ont., (Food Administration), Honours;
● MALLETTE, Kathleen, Montreal, P.Q., (Dietetics), First Class Honours, University Scholar;
MCPEAK, David, Ste. Foy, P.Q., Major in Food Science (Food Chemistry Orientation), Honours;
● MOORE, Danielle, Sillery, P.Q., (Dietetics);
RICH, Jane Elizabeth, St. Armand, P.Q.,(Nutrition), First Class Honours, University Scholar;
● ROBILLARD, Jill, Montreal, P.Q., (Dietetics);
● SABOURIN, Sylvie, Montreal, P.Q., (Dietetics);
● SAMUEL, Mariette, Dorval, P.Q., (Dietetics), First Class Honours, University Scholar;
SHAMIE, Lynda Catherine, Town of Mount Royal, P.Q., (Consumer Services), First Class Honours;
SHEINER, Jamie Brenda, Montreal, P.Q., (Nutrition), First Class Honours, University Scholar;
● SHRIER, Joni Gail, Côte St. Luc, P.Q., (Dietetics), First Class Honours, University Scholar;
● SMITH, Stephanie Alice, Beaconsfield, P.Q., (Dietetics), First Class Honours, University Scholar;
STEVENS, Nicola, Dollard des Ormeaux, P.Q., (Consumer Services), Honours;
● SYLVESTRE, Louise, Laval, P.Q., (Consumer Services);
● TAN, Swee Boo, Brossard, P.Q., (Food Science);
TSANG, Raymond, St. Laurent, P.Q., (Food Science);
● VADESZ-DUMONT, Silvia, Montreal, P.Q., (Dietetics);
● VINER, Patricia, Montreal, P.Q., (Dietetics), Honours;
● WEISBLOOM, Cheryl, Montreal, P.Q., (Dietetics);
● WONG, Emily, St. Laurent, P.Q., (Dietetics);
WONG, Yee Man Maria, Kowloon, Hong Kong, (Food Administration).
● Granted in February

BACHELOR OF SCIENCE IN AGRICULTURE

Agricultural Sciences Division

Candidates presented by Professor A. F. MacKenzie, Associate Dean

ALIM, Jumat, Jalan Tutong, Brunei, (Plant Science), Honours;
● AUBRY, Renée St. Lambert, P.Q., (Plant Science), Honours;
BABIN, Brian E., Restigouche Co., N.B., (Plant Science), Honours;
BAKER, Robert, Ste. Anne de Bellevue, P.Q., (Animal Science), Honours;
BEAULIEU, Yvan, Lennoxville, P.Q., (Agricultural Economics), Honours;
BEDARD, Julien, Granby, P.Q., (Agricultural Economics), First Class Honours;
BELANGER, Pierre, St. Janvier, P.Q., (General Agriculture), Honours;
BLAIS, Pierre Alain, Longueuil, P.Q., (Plant Science), First Class Honours, University Scholar;
BREAU, Paul, Moncton, N.B., (General Agriculture),Honours;
BRILLANT, Jules, Montreal, P.Q., (General Agriculture);
BROCHARD, Hubert, Outremont, P.Q., (Plant Science), Honours;
BROWN, Philippa, St. Lazare, P.Q., (Animal Science);
BUCHER, Donald, Islip Terrace, N.Y., (Agricultural Chemistry);
● CARDINAL, Pierre, Cartierville, P.Q., (Soil Science);
CARRENO, José G., Outremont, P.Q., Animal Science), Honours;
CARSON, Ann Louise, South Durham, P.Q., (General Agriculture);
CHAMBEFORT, Catherine, Montreal, P.Q.,(Animal Science);
CHAPUT, Louise, Pierrefonds, P.Q., (Agricultural Chemistry), First Class Honours, University Scholar;
● CHARRON, Charles, Rougemont, P.Q., (Agricultural Economics);
● CLEMENT, Michel, Dorion, P.Q. (Plant Science), First Class Honours, University Scholar;
● COTE, Pierre, Montreal, P.Q., (Agricultural Economics), Honours;
CREPEAU, Guy, St. Hugues, P.Q., (General Agriculture), Honours;
CROMWELL, Gwendolyn, Pincourt, P.Q., (Animal Science);
CROWE, Nancy Lynn, Truro, N.S., (Agricultural Chemistry), First Class Honours, Haddon Common Prize in Agricultural Chemistry, University Scholar;
CURRIE, Andrew W., Fredericton, N.B., (Plant Science);
CURRIE, W. James, Macdonald College, P.Q., (General Agriculture), Honours;
DAGENAIS, Danielle, Montreal, P.Q., (Plant Science), First Class Honours, University Scholar;
DRAPEAU, Normand, Montreal, P.Q., (Plant Science), Honours;
DUBE, Sylvain, St. Pamphile, P.Q., (Plant Science), Honours;
DUGUAY, Céline, Granby, P.Q., (Agricultural Economics);
DURAND, Jean, Montreal, P.Q., (General Agriculture), Honours;
FERLAND, Marc, St. Thomas d'Aquin, P.Q., (Agricultural Economics), First Class Honours
GAGNE, Mireille, Baie-Comeau, P.Q., (Animal Science);
GAUDREAU, François, Laval des Rapides, Laval, P.Q., (General Agriculture);
GENEST, Claude, Prévost, P.Q., (Plant Science), First Class Honours;
HARARI, Maya, Town of Mount Royal, P.Q., (Animal Science), First Class Honours, University Scholar;
● HARRIS, Janet Constance, Montreal, P.Q., (Animal Science);
HEBERT, Johanne, Ste. Foy, P.Q., (Plant Science), Honours;
HELIE, Andrée, Repentigny, P.Q., (Plant Science), Honours;
KOEHOORN, George Peter, Pictou, N.S., (Plant Science), Honours;
LAFOND, Pierre, Pointe aux Trembles, P.Q., (General Agriculture);
● LAGARDE, Claudette, Montreal, P.Q., (Plant Science), Honours;
LAHAIE, Louis, Pointe Claire, P.Q., (Soil Science), Honours;
LAMBERT, Micheline, La Pocatière, P.Q., (Plant Science), Honours;
LAPIERRE, Brigitte, Repentigny, P.Q., (General Agriculture);
LAROCHE, Jean-Marie, Warwick, P.Q.,

(General Agriculture);
LAURIN, David Earl, Greenfield Park, P.Q., (Animal Science), Honours;
LAWSON, Valerie, Halifax, N.S., (Animal Science);
● LECLAIR, Simon, Ste. Dorothée, Laval, P.Q., (General Agriculture);
LECLERC, Stephane, Brossard, P.Q., (Animal Science);
LEPRINCE, Louis, Montreal, P.Q., (General Agriculture), Honours;
LONG, Catherine Louise, Hampton, N.B., (Plant Science);
LONGTIN, Daniel, Montreal, P.Q., (General Agriculture), Honours;
MACLEAN, Katherine Mary, Newcastle, N.B., (Agricultural Economics);
MACQUARRIE, John Alaistair, Dartmouth, N.S., (Plant Science), Honours;
MALO, Robert, Montreal, P.Q., (Plant Science), Honours;
● MARTEL, Evelyne, Alma, P.Q., (General Agriculture), Honours;
MARTIN, Daniel, St. Hyacinthe, P.Q., (Animal Science);
MCCLEAVE, Meta Ellen, Bloomfield Station, N.B., (Animal Science), Honours;
MCDONALD, William Joseph, Liverpool, N.S., (Animal Science), Honours;
MENARD, Mario, Rigaud, P.Q., (Agricultural Economics), Honours;
MESLY, Nicolas, Montreal, P.Q., (Agricultural Economics), Honours;
● MINEAU-TEES, Hélène, Dollard des Ormeaux, P.Q., (Agricultural Chemistry), Honours;
● MOISAN, Michael C., Lachine, P.Q., (Agricultural Economics), Honours;
MORRIS, J. Kenneth, Alexandria, Ont., (General Agriculture), Honours;
MORRISON, Malcolm, Ottawa, Ont., (Plant Science), Honours;
MURRAY, Joanna, Apple Hill, Ont., (Soil Science), Honours;
NADEAU, Leonie, Pointe Claire, P.Q., (Plant Science), First Class Honours, Cutler Shield, University Scholar;
NELLES, Jessie, Town of Mount Royal, P.Q., (Plant Science), First Class Honours;
● NOBERT, Pamela Joan, Quebec, P.Q. (Agricultural Economics), Honours;
NOEL, Marc, Magog, P.Q., (General Agriculture);
O'CONNOR, James, Beaconsfield, P.Q., (Agricultural Economics), Honours;
● OBRY, Michelle, Montreal North, P.Q.,(Plant Science);
ODENSE, Eric Louis, Darmouth, N.S., (Plant Science), Honours;
OUELLETTE-BABIN, Diane L., Restigouche, N.B.,(Plant Science), Honours;
PAYETTE, Louis, Saint Paul de Joliette, P.Q., (General Agriculture);
PELTIER, Sylvie, Longueuil, P.Q., (Agricultural Economics), First Class Honours;
● PERRAULT, Hélène, Montreal, P.Q., (Agricultural Economics), Honours;
● PETTEN, Jeffrey Carl, Conception Bay South, Nfld., (Animal Science), First Class Honours;
● PETTIGREW, Danielle, Ste. Foy, P.Q., (General Agriculture), Honours;
● PICK, Arthur Aulay, Upper Rawdon, N.S., (General Agriculture), Honours;
POST, Gerald Adrian, New Glasgow, N.S.,(General Agriculture);
PRICE, Doris Mary, Hopewell Cape, N.B., (Plant Science), First Class Honours, University Scholar;
● PROULX, Manon, Montreal, P.Q., (General Agriculture), Honours;
RAMSAY, Jean, Sherbrooke, P.Q., (Agricultural Economics), Honours;
● RHEAUME, John, Montreal, P.Q., (Animal Science), Honours;
ROBITAILLE, Line, Beloeil, P.Q., (Agricultural Chemistry), First Class Honours, University Scholar;
ROETT, Cindy Ann, Lachine, P.Q., (Plant Science), Honours;
ROGERS, Mary Virginia, Sydney, N.S., (Animal Science), Honours;
ROTHSTEIN, Shelley, Town of Mount Royal, P.Q., (Animal Science), Honours;
SAUVE, Marie, Valleyfield, P.Q., (Animal Science);
SAVAGE, Daniel, Dollard des Ormeaux, P.Q., (Plant Science), Honours;
SCANDELLA, Giacomo, Montreal, P.Q., (Animal Science);
SHEPPARD, Elaine, Roseneath, Ont., (General Agriculture);
SIMONI, Elizabeth Ann, Norwood, Mass., (Animal Science), Honours;
SINCENNES, Michelle, Montreal, P.Q., (General Agriculture), Honours;
● SLENO, Barry, St. Laurent, P.Q., (Soil Science), Honours;
● ST LAURENT, Anne Marie, Ste. Foy, P.Q., (Animal Science), Honours;
● ST-PIERRE, Hugues, St. Hyacinthe, P.Q., (General Agriculture);
● TESSIER, Marie-Christine, Laval, P.Q., (Animal Science);
THERIEN, Yvon, Laval, P.Q., (General Agriculture), Honours;
THOMPSON, Barry Lionel, Halifax, N.S., (Soil Science);
VAILLANCOURT, René, Laval, P.Q., (Plant Science), Honours;
VILLASENOR YANEZ, Marina, Trenton, N.J., (Plant Science);
WHITMAN, Thomas, Lawrencetown, N.S., (General Agriculture);
● WONG, Toon Ngee, Cameron Highlands, Pahang, Malaysia, (Soil Science);
● ZABEK, Teresa, Rigaud, P.Q., (Animal Science), Honours.

● Granted in February

Biological Sciences Division

Candidates presented by Professor W.E. Sackston

● BAILLARGEON, Andrée, Town of Mount Royal, Que., (Environmental Biology), Honours;
CHURCHER, J. Joseph, Belleville, Ont., (Zoological Sciences), Honours;
CRANCH, Colleen Anne, Baie d'Urfé, P.Q., (Botanical Sciences), Honours;
FAIRCHILD, Wayne Lawrence, Pointe Claire, P.Q., (Zoological Sciences), Honours;
FOSSIEZ, François, Montreal, P.Q., (Microbiology), Honours;
GAVLAS, Shirley Jane, Lachine, P.Q., (Microbiology), First Class Honours, Governor General's Medal, Gray Prize in Microbiology, University Scholar;
GOSS, Veronica, Baie d'Urfé, P.Q., (Microbiology), Honours;
GRANT, James, Mansonville, P.Q., (Evironmental Biology), Honours;
HUME, Vicki, Melbourne, P.Q., (Environmental Biology), Honours;
JOSEPH, Renée, Kingston, Jamaica, WI, (Microbiology);
● JUTRAS, Pierre, Verdun, P.Q., (Environmental Biology), Honours;
LAFORTUNE, Céline, Lasalle, P.Q., (Microbiology), Honours;
LEPINE, Yves, Drummondville South, P.Q., (Environmental Biology), Honours;
MEYERS, Tab, St. Laurent, P.Q., (Environmental Biology), Honours;
PESKIR, Amilia, Ste. Anne de Bellevue, P.Q., (Microbiology);
RAFUSE, Christene Louise, Bridgewater, N.S., (Botanical Sciences), First Class Honours;
RIVARD, Claude, Rivière des Prairies, P.Q., (Environmental Biology), Honours;
SAMSON, Judith, Montreal, P.Q., (Zoological Sciences), First Class Honours, University Scholar;
SCHORSCHER, Judith Anne, Sutton, P.Q., (Zoological Sciences), First Class Honours, University Scholar;
STOBO, Carol, Ste. Foy, P.Q., (Microbiology), First Class Honours, University Scholar;
STRATIGAKOS, Artemis, Beaconsfield, P.Q., (Environmental Biology), First Class Honours;
TOMAN, Donna Marie, Montreal, P.Q., (Microbiology);
● TOPP, Edward, St. Lambert, P.Q., (Microbiology), Honours;

● Granted in February

Renewable Resources Division

Candidates presented by Professor M. Chevrier, Divisional Coordinator

BOUTIN, Suzanne, Beaconsfield, P.Q., (Environmental Conservation), Honours;
CHENEVERT, Suzanne Anita, Montreal, P.Q., (Wildlife Resources);
DESROCHERS, Françoise, Contrecoeur, P.Q., (Wildlife Resources), Honours;
HEATH, Valerie, Candiac, P.Q., (Environmental Conservation), First Class Honours;
LEVESQUE, Susanne, St. Jérôme, P.Q., (Wildlife Resources), Honours;
MCGEACHY, Sandi, St. Stephen, N.B., (Wildlife Resources), Honours;
PHANEUF, Christiane, Montreal, P.Q., (Environmental Conservation);
● ROY, Louis, Longueuil, P.Q., (Wildlife Resources), Honours;
● WAYLAND, Mark Edmund, Ste. Anne de Bellevue, P.Q., (Wildlife Resources), First Class Honours;
● YACOWAR, Ronald, Laval, P.Q., (Environmental Conservation);
ZINGER, Natalie, Outremont, P.Q., (Wildlife Resources), Honours.

● Granted in February

BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

Candidates presented by Professor E. McKyes, Chairman, Department of Agricultural Engineering

ARMSTRONG, Guy A., St. Lambert, P.Q., Honours;
BERTRAND, Claude, Thunder Bay, Ont.,
BURROWS, Joanne, Beaconsfield, P.Q., Honours;
DESJARDINS, Ronald, Laval, P.Q.,
GORMAN, Christine Mullen, Amherst, N.S., Honours;
● HII, Simon, Sibu, Salawak, Malaysia, Honours;
KINNIE, Aubrey Bruce, Moncton, N.B.,
MACKIE, Rob, St. Lambert, P.Q.,
● MASON, Art B., Ste. Anne de Bellevue, P.Q.,
MUKTADIR, Kazi Abdul, Karachi, Pakistan,
NASIELSKI, Jack, Montreal West, P.Q.;
PANNU, Kulbir Singh, Montreal, P.Q., Honours;
● RATHBONE, Mary Katharine, Surrey, B.C.;
ST-PIERRE, Stephen, Québec, P.Q.;
STRATFORD, Christopher, Senneville, P.Q.;
● TESSIER, Sylvio, Ile Perrot, P.Q., First Class Honours;
WEIL, Claude, Montreal, P.Q., Honours;
WILSON, Peter Wendell, Stanley, N.B., Honours.

● Granted in February

BACHELOR OF EDUCATION IN HOME ECONOMICS

The following students who studied for two years on the Macdonald Campus, received their degrees during the regular Bachelor of Education convocation at the Place des Arts on Thursday June 11.

GAUTHIER, Cheryl Ann, Verdun, P.Q.:
GRAHAM, Heather Anne, Verdun, P.Q.;
PERREAULT, Wendy Margaret, Pointe Claire, P.Q.;
STURTON, Beverly Ann, Mont St. Hilaire, P.Q., University Scholar;
WALSH, Pamela Jean, LaSalle, P.Q.

FACULTY OF GRADUATE STUDIES AND RESEARCH

Candidates introduced by Dean G.W. Maclachlan

MASTER OF SCIENCE

BENTLEY, L. Gordon, Montreal, P.Q., The role of seminal plasma and sperm membrane proteins in mammalian reproduction, (Animal Science)
BILDER-GARRIZ, Patricia I., Bahia Blanca, Argentina, Effects of source-sink manipulations on the components of yield in Barley Hordeum Vulgare L., (Plant Science)
CAMBRIDGE, Patrick, Port of Spain, Trinidad, WI, An Evaluation of the First Production-Scale Subsurface Drainage System in Trinidad and Tobago,(Agricultural Engineering)
DAMANT, Christine, Baie d'Urfé, P.Q., The Use of Weather Radar for Measuring and Forecasting Rainfall over Watersheds, (Agricultural Engineering)
DESIR, Finbar Lambert, St. Lucia, WI., A Field Evaluation of the Wedge Approach to the Analysis of Soil Cutting by Narrow Blades, (Agricultural Engineering)
GETLER, Michael, Montreal, P.Q., A comparison of agricultural resources management on selected group and individual farms in Saskatchewan, (Renewable Resources)
GUEVIN, José, Nicolet, P.Q., Celery blackheart occurrence during growth as influenced by light quality and nutrition, (Plant Science)
HAYWARD, Brian, Montreal, P.Q., The Demand for Feed Grain Transportation Services in Eastern Canada, with a Special Emphasis on the Rail Mode, (Agricultural Economics)
PERRATON, Etienne, Montreal, P.Q., Influence des instruments de culture sur la restructuration d'un sol compacté et le comportement d'une culture de sarrasin, (Agricultural Engineering)
PHANEUF, Jean, Drummondville, P.Q., Etude socio-écologique de l'Etang de Miragoane, Haiti, (Renewable Resources)
RICHARD, Paul, St. Laurent, P.Q., Heat Transfer Aspects of Drying and Processing by Immersion in a Particulate Medium, (Agricultural Engineering)
TINKER, Stephen, Ste. Anne de Bellevue, P.Q., An assesment of damage caused to corn by captive Red-winged Blackbirds, (Renewable Resources)

DOCTOR OF PHILOSOPHY

ALI, Omar Solomon Hassan, Egypt, Modelling of the Soil Mechanical Properties to Soil Moisture Conditions and their Applications to Study the Traction Developed by Lugged Tires,(Agricultural Engineering)
ANSAH, George A., Takoradi, Ghana, The influence of six generations of selection for fertility of frozen-thawed semen in the fowl on fertility, semen characteristics and semen cholesterol and phospholipid levels, (Animal Science)
DOWNEY, Bruce R., Senneville, P.Q., Studies on follicular development and ovulation in cattle and swine, (Animal Science)
RASHID-NOAH, Augustine Bundu, Sierra Leone, Designing Subsurface Drainage Systems to Avoid Excessive Drainage of Sands, (Agricultural Engineering)
SEGAL, Neil B., Dollard des Ormeaux, P.Q., The development of an **in vitro** perfusion system to assess the function of rabbit kidneys and its application towards the treatment of kidneys with the cryoprotectant dimethysulfoxide,(Animal Science)
STEPHENS, Christian Aurelius, St. Vincent, WI, Isolation and characterization of glycosaminoglycan-peptide fractions from avian tissues and studies on the incorporation of 14C-carbohydrate precursors **in vitro** and **in vitro**, (Agricultural Chemistry and Physics)
WALL, Gavin Lindsay, Canterbury, New Zealand, Performance of a Tangential Feed Threshing Cylinder as Affected by Corn Cob Break-up and Concave Design Parameters, (Agricultural Engineering)

(Continued from page 3)

ten in 1957, of Melville and Peggy DuPorte: "Their home became well known to entomologists who have studied at Macdonald College as a place to relax in a friendly atmosphere and enjoy conversation at its best. Together they have lived a very full life, maintaining wide interests in the arts as well as in the sciences. . . No man has ever been more devoted to his work or to his students than Melville DuPorte. This is attested by the gratitude shown by his graduates." And to this we add: "and all those who have had the honour and benefit of his friendship."

To Peggy, his widow, I wish to express, on behalf of the whole Macdonald Clan, our heartfelt sympathy on her sad bereavement, but I would also ask you, and her, that, while mourning his departure, we also rejoice that we were privileged to know him. His memory will be cherished by us all.

D. Keith McE. Kevan,
Professor of Entomology and Director, Lyman Entomological Museum and Research Laboratory,
Macdonald Campus of McGill University.

Delivered in the McGill University Chapel, Montreal, 5. VIII. 1981.

The Family Farm

Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

GRAIN VEAL IN QUEBEC: CONSUMPTION COULD GO FROM 1.9 KILOGRAMS TO 3 KILOGRAMS PER PERSON

A survey carried out with 140 consumers in four cities of the province indicates that per capita consumption of veal could rise from 1.9 kilograms to 3 kilograms if distribution channels succeed in correcting certain buying obstacles such as the high price and the lack of regular supply of this product in the food stores.

This survey, which was done to find out the reaction of Quebec consumers to grain veal, was conducted by the Department of Economic Studies of the Quebec Ministry of Agriculture, Fisheries, and Food with consumers from Montreal, Quebec City, Sherbrooke, and Trois-Rivières. The consumers were selected from among people of Italian origin who consume a great deal of veal.

The two objectives of this study were as follows: on the one hand to measure the possibility of substituting grain veal for milk veal and to estimate the potential volume of the market for grain veal from these opinions as well as the buying intent found among these consumers.

The results mentioned above, obtained following a consumer's test and with the information supplied on the different characteristics of the meat of grain veal, mean a rate of increase of about 60 per cent in veal consumption.

If the buying intentions of French-speaking Quebecers were materialized, they would consume only grain veal in the proportion of 49 per cent, milk veal for only one per cent, and the two types of veal for about 50 per cent of the population sampled.

When this is converted to production equivalents, these consumption data will represent some 154,300 head of grain veal and 93,500 head of milk veal, while the real consumption in 1979 expressed in production equivalents represented only 191,000 head of milk veal.

The authors of this survey note that the presentation of the project has certainly had an impact on sales for the people who were surveyed. On the other hand, they indicate that this impact proves with certainty the attention that one will have to give to marketing of the product if veal consumption in Quebec is to be stimulated.

Finally, it seems that grain veal has a number of attributes which will facilitate its access to the table and to the consumer. However, complete information on this product will have to be prepared, including recipes, and publicity campaigns will have to be organized.

Grain veal can be developed in Quebec at a very high level before the market becomes saturated with it.

Preference for Grain Veal

It was interesting during the survey to determine which type of veal was preferred by the consumers. The examinations of the results obtained from French Quebecers and Italian Quebecers has demonstrated that grain veal was preferred to milk veal. The two main criteria which determine this preference are the flavour and the appearance. Consumers consider grain veal as less insipid, therefore more flavourful. Other factors which militate in favour of grain veal are the possibility of obtaining more small boneless cuts as well as more meat for the various cuts.

During the survey, it was established that the pink colour of grain veal was not an obstacle to consuming that meat on the condition that grain veal be properly identified so that the consumers know why the flesh is pinkish.

In summary, this perception of grain veal and milk veal brings some elements which show the possibility of substituting heavy grain veal for small milk veal.

Anyone who wishes to obtain the results of the survey "Le veau de grain — Enquête sur les perceptions des consommateurs québécois" can write to Information Service, 200 chemin Ste-Foy, Quebec.

POTATO PRODUCTION: IRRIGATION AND SOIL CULTIVATION

Potato production requires a regular supply of water for an abundant crop of quality. The high doses of chemical fertilizers used require a soil which is sufficiently damp in order to be efficient. The regular supply of water prevents scab and the information of misshapen tubers.

Potatoes produce shallow roots and they cannot easily draw water from deep in the soil. Many soils used in the production of potatoes have a light texture, do not hold water well, and are often subject to drought at the time when the plants need the most water.

Irrigation Timing

Potatoes require the most water when they are in full growth a period which corresponds to the formation of stolons and tubers. To have a continuous supply of water during the growing period one must maintain the available water level in the soil above 50 per cent.

There are two instruments which can be used to measure moisture content quickly: the hydrometer and the tensiometer.

A) Hydrometer

An instrument which is based on the resistance of the soil to the passage of an electric current. The resistance increases with the dryness of the soil.

B) Tensiometer

An instrument which measures the retension force of the water in the soil. It works well in light soils. The amount of moisture must be measured at 15 centimeters deep.

One can also determine the time of irrigation by using the method known as the moisture balance in the soil. With the help of a rainguage, the daily precipitations are measured. If, after seven days, the amounts accumulated are less than 2.5 centimeters of water, the difference will be made up by irrigation.

Amount of Water Required

In order to determine the amount of water to give to the plants one must take into account their needs and the water retention capacity of the soil.

During their intensive growth potatoes need 2.5 centimeters of water per week. Light textured soils do not hold fertilizers well. In order to avoid their leaching, one must not apply more than 2.5 centimeters of water per treatment or per irrigation.

A margin of 1.5 centimeters must be kept in case of subsequent rain. For the loams, heavier soils, one can supply four centimeters of water per irrigation.

Soil Cultivation

Soil cultivation is always considered as a necessary evil. One tends to limit cultivation to the minimum in the plantation because of the greater and greater cost of energy.

If potato production is being done on a soil relatively free of perennial weeds, one can control the annuals by herbicide treatment either before seeding or in pre-emergence according to one's wishes. The use of these products will permit reduction in the cultivation of the soil. However, under certain conditions it is necessary to cultivate. Some producers who do not use herbicides must, before the emergence of the potatoes, do one cultivation with a light toothed harrow or a roto tiller. In heavy compact soils the cultivation will facilitate aeration and will increase the water retention capacity. The cultural methods must always be superficial and carried out in such a way as to avoid breaking the young shoots and roots. With the technique of flat seeding, having for its main purpose to favour the formation of tubers as deep as possible, it is important not to hill before the appearance of the flowers. Hilling done too early will favour the formation of the tubers on the surface. The hills will be large and flat so as to resist wind and rain erosion while favouring a good covering of the tubers until harvest.

Slowing plant growth and maturation by late cultivation in the field must be avoided. Vigorous cultivation with risk to the foilage and root system must also be avoided.

FLIES AND DAIRY CATTLE

This document, one of a series of three articles, was prepared in collaboration with Mr. Rosaire Marcoux, Veterinarian of the Division of Veterinary Services of the Quebec Ministry of Agriculture, Fisheries, and Food at Montmagny.

It has often been written that flies are the real plague. Their reputation is there to prove it and we have known for a long time the role they play in the dissemination of certain diseases. Means to control their pro-

pagation as well as to induce their extermination have been studied for a long time. Nevertheless, they are always there to bother both man and beast.

Among the flies that the dairy producers are concerned with are five of which we should have better knowledge: the domestic fly, the face fly, the barn fly, the horn fly, and the warble fly.

The Domestic Fly

This fly is also known as the house fly. About 14 days elapse before an egg will give birth to an adult fly which will have a life span of from three to four weeks. During that period, the fly will lay its eggs in decaying organic matter. She can lay eggs from two to seven times during her lifetime with 100 to 150 flies each time. When the fly feeds itself it dissolves the food with its saliva, regurgitates it and then re-eats it. The matter which has been regurgitated is commonly known as fly speck. This fly does not bite and does not cause any problems as such. However, it is considered a good transporter of microorganisms because of the places it frequents.

The Face Fly

This fly regenerates itself every two weeks. It lays its eggs in fresh dung (15 minutes) and does not go into the barns. As its name indicates, it is a very bothersome fly for the animals because it stays around the muzzle and the eyes and brings on tears. It feeds itself in daytime only, eating blood which has been removed by other blood eaters; it will also feed on saliva, the lymph and muzzle secretions and sweat which oozes through the skin of the cattle. It is partly responsible for the inflammation of the mucosa of the eye, often known as pinkeye. During the winter it takes refuge in heated buildings and stays between walls and in attics when it reaches adulthood.

The Barn Fly

This fly, has a life cycle of 30 days.

It will have three generations per summer. The female lays about 500 eggs in damp hay, straw, or other decaying substances. It hibernates in the larval form. It is active during the day only and it bites the animals to feed on their blood many times a day, taking one or two drops of blood each time. After having taken its meal, it goes to rest on walls, ceilings, floors, trees, or fences.

The Horn Fly

After having hibernated in the larval form, the horn fly has a life cycle of 15 days. The female lays its eggs in very fresh dung (two minutes) and gathers on the back and shoulders of the animals, often more than 500 individuals on the same animal. This little fly will stay on the animal unless it decides to change hosts. It infiltrates itself in the hair to bite and feed on blood. It sometimes causes wounds and ulcerations. It is very voracious; it has been evaluated that 10,000 of them will drink one litre of blood per day!

The Warble Fly

Finally, cattle are bothered by another fly commonly known as the warble fly: it's real name is hypoderma, because the larvae penetrate and travel under the skin. This fly — there are two varieties — lives in the shadow of woodlots and finds animals during sunny weather where it lays its eggs. Before laying, it whirls around the animals and can bring about a stampede. The animals run away rapidly with their tails up in the air.

Depending on the variety, females will lay their eggs on each hair of the legs or in rows. The eggs hatch in less than a week. Certain larvae penetrate under the skin where the hair is implanted, and they lodge themselves in the diaphram to carry on their development; others are swallowed when the animal licks its legs and they move to the esophageous. The larvae will migrate toward the dorsal regions toward the end of the fall, prepare some living quarters in which to hibernate and will perforate the skin to aspire. The larvae come out in the spring and fall to the ground where they will emerge as adults three to four weeks later.

It is mainly the young cattle of less than three years that are affected by warbles, because it is believed that when they are older they establish a certain immunity against them.

Flies will eat anything — even profits.

WILD OATS — AN ENEMY TO FIGHT

Wild oats is an annual grain which is found just about everywhere in the world. This plant, which comes to us from Asis, is one of the worst weeds in cereals.

Wild oats, explains, Mr. Bruno Maltais, Agronome, is a weed for the following reasons: it harms the seedlings (competition); it persists for a long time in the soil; its germination is unforeseeable (dormancy); it sheds its seeds readily (difficult harvest), and its presence downgrades the crops.

Description of the Plant

Morphologically, wild oats looks a lot like cultivated oats. It is nevertheless easily recognized at the adult stage. The straw is generally longer, the panicle is inclined and the seed is very different. The wild oat seed is elongated and pointed. At the base of each one finds a sucker and a tuft of hair. It is at that point that the seed is tied to the straw. This attachment is very weak, which permits the seed to detach itself easily from the plant and to fall to the ground as soon as it is mature.

The seed also bears a prominent awn. This awn helps the seed to penetrate into the soil. In fact, this awn has the ability to roll and to unroll itself according to the degree of moisture . . . it drops during the day, rolls up, and during the night it unrolls. This phenomenon causes the seed to move and permits it to penetrate into the soil. The seed colour is variable going from pale yellow to shades of grey or brown to black when it has reached maturity. At the seedling stage, the wild oat is easily recognized (but one has to look carefully) by the absence of the auricle and the presence of very fine hairs on the lamina. The wild oat leaves are overlapping one to the other, clockwise; it is the reverse with wheat and barley. In case of doubt, one can always dig up the seedling and confirm the identification by the seed.

Seed Comportment: Persistence in the Soil

Different studies have been carried out to determine the length of the viability of the seeds in the soil. Without bringing in new seed, it takes nine years maximum to use up all the seeds that are in the soil. It is very clear that if new seeds are seeded, the period can be prolonged

Shapes of oat panicles. A. Symetric (cultivated oats). B. One-sided oats. C. Wild oats.

indefinitely. The depth of the seed in the soil does not seem to have any effect on their persistence. However, it can be said that 60 to 80 per cent of the seed emerge from the first three inches (7.5 centimeters). The emergence would be a lot easier if the seeds were on the surface. Persistence is identical in different types of soil. Soil cultivation has more or less an effect.

Seed Germination

Many factors influence the germination of the wild oat seed: on the one hand, genetic factors, temperature of the air and of the soil, the quantity of oxygen and moisture in the soil and, on the other hand, cultural methods.

There is no explanation for the genetic factors: we only know that the brown-black seeds have a longer dormancy than the grey-yellow seeds which germinate more readily.

The temperature during the maturation of the wild oat seeds influences their aptitude to germination. Hot dry weather favours germination. On the other hand, under cool and moist conditions the seed enters a deep dormancy. Wild oats can germinate at temperatures between 2° and 30° Celsius. However, it will take longer.

Dormancy

Often the wild oat seeds, even under favourable conditions, do not germinate. They are dormant; that is, in a latent state of rest. This permits, among other things, the seeds not to germinate in the fall, to spend the winter and to germinate only in the following spring. This phenomenon protects the seeds and plays an important role in the length of the viability in the soil, and is still not too well understood.

The Wild Oats Problem

In Quebec the problem of wild oats increases. Wild oats is seen just about everywhere because many farmers seed the weed. In Quebec if one doesn't seed wild oats, one

doesn't have any. If you have some in your fields, it is because you seeded them! Wild oats costs millions of dollars to Canadian producers. It reduces the yield of the crops and downgrades the harvest.

Wild Oats Control

A single wild oats plant can produce 150 seeds or more. As we have seen, these seeds persist in the soil. Perfect control is needed to eliminate them. Cultural methods all have a certain merit and some limitations. Summerfallow combined with a late seeding in the following spring is successful. It can lower the infestation by 95 per cent, but one crop is lost and to delay seeding decreases the yield.

Shallow cultivation after seeding when wild oats have emerged is also efficient, but the cereal will have to be seeded more deeply. There is only a very short period to do this. All that is needed is a few days of rain which will prevent one from doing it.

Crop rotation is an efficient means of control. This may be the reason that there is not too much wild oats in Quebec. (Cereals one year — two or three years of hay.) This method facilitates, among other things, the efficient use of herbicides.

During the last few years, very selective herbicides have been employed to control wild oats in cereals. For further information on herbicides and their application, consult the Guide de protection des grandes cultures de CPVQ.

GOOD QUALITY FORAGE IS PROFITABLE

For many years already, the Quebec Ministry of Agriculture, Fisheries, and Food personnel as well as many others in the field have repeatedly said that forages must be cut and harvested early in order that they are of the best quality possible.

In this article, attempts will be made to evaluate with numbers the advantages which result from a better quality hay.

The Problem

If the crude protein per cent of forages is increased by one per cent, (the energy is left to follow the variation in protein), how much feed will be saved and consequently what will be the economic result?

The Technical Answer

In analyzing the different feed ration recommendations based on the true forage analysis we can come to the following conclusion: if the crude protein per cent of the forage is increased by one per cent:

a) the cow will consume by herself about 0.9 kilograms per day (two pounds) more of hay;
b) to maintain the same milk production, the quantity of feed (16 per cent C.P.) given can be decreased by 0.9 kilograms per day.

The Economic Answer

a) As far as hay is concerned the cow should eat by herself about 0.9 kilograms of additional hay per day. This increase in consumption will take place only during the period in which the cows are in the barn, in this case, 240 days.

Each cow in the herd will, therefore, require 216 kilograms of additional hay per year which means for a herd of 40 cows an additional consumption of 8.6 metric tonnes (9.6 tons).

The additional cost brought about by this increased consumption will be for the purpose of our studies $33 per metric tonne ($30 per ton). This amount represents all variable charges to produce a tonne of hay. Fixed costs of buildings and machinery are not included.

It will therefore cost $285 more for the hay per year for a 40-cow herd.

b) As far as feed is concerned, the decrease in consumption of feed will be 0.9 kilograms per day (two pounds). On the other hand, this decrease caused by better quality forage will take place only during the period in which the animals are housed.

Secondly, during the drying up period of the cow, the daily feed saving will not be as high as that during the period of lactation. Therefore, for our study it will be considered that savings are being obtained only during the lactation period of 305.

Therefore, in combining the two time constraints one can say that feed will be saved during 66 per cent of the 305 days of lactation or during 201 days.

For a 40-cow herd the savings will therefore be: 40 cows x 0.9 kilograms per day x 201 days = 7,236 kilograms, or 7.2 metric tonnes at $250 per metric tonne. The amount saved will, therefore, be $1,800 per year ($45 per cow).

Therefore, since it has cost $285 to get the additional forage and, on the other hand, we have saved $1,800 in feed, the net savings for this operation would be $1,515.

Thus, for an additional one per cent of crude protein, one can save $1,500 for a 40-cow herd or $38 per cow. If the percentage of crude protein was increased by two per cent, one could almost double the savings which would amount to $3,000 for a 40-cow herd or $76 per cow.

As can be seen, it is not necessary to have large improvements to produce interesting savings.

How It Is Done

To improve the quality, there are several methods, from the one which is free, or almost free, to the one that is more expensive, more difficult to render profitable.

Mow at the right time Harvesting at the proper stage of growth is the means which has the most marked effect on the forage quality. In general, the older a forage plant gets, the lower is its quality.

For example, the yield of digestible dry matter in timothy increases up to the full heading stage, then remains constant. This means that after the heading stage any increase in yield is nullified by a decrease in digestibility. The yield in protein increases as well up to heading and decreases afterwards. It can therefore be said that when the panicle comes out of the flag leaf sheaf, the yield in digestible dry matter and in proteins are at their maximum.

Furthermore, an early harvest at the recommended stages often allows a second mowing and sometimes a third, depending on the regions.

In the following table, the ideal stages of harvesting for the pure species most common in the regions are:

Alfalfa — first flowers
Timothy — heading
Bromegrass — heading
Red clover — 10 per cent bloom.

When a legume (clover, alfalfa) is in a mixture with a grass (timothy, bromegrass), the mowing is done at the ideal stage of harvest for the legume.

In practice, haying should start a little bit before the ideal harvesting stage so that most of the forage will be mowed when the quality is at its best.

Cultivars (varieties)

In order to be able to harvest all the crop or most of it at a good stage, different cultivars which have different rates of growth may be used. This method doesn't cost anything. All that is need is to put it into practice and in a few years the desired results will be obtained.

Hay Drier

The hay drier is useful in that it limits as much as possible the length of drying of the forage in the field, thereby decreasing the losses due to bad weather. Thus, hay may be cut at a younger stage when it is more difficult to dry.

It should be added, as well, that the hay drier makes it possible to gather forage which would otherwise be lost. Indeed, when forage is harvested at a slightly greater degree of moisture, it is more pliable and less breakable. The risks of losses by loss of leaves are, therefore, decreased. It has been said that losses can be lowered by nearly 10 per cent.

Most farmers already own this equipment. Therefore, there would be very few additional costs. For some it could be more advantageous or even necessary to build a more appropriate tunnel, but this cannot represent additional costs which would be too high to question the use of a drier. In fact, even if a drier had to be bought and financed, it could be a worthwhile thing to do.

Silage

As with a drier, silage wants to limit as much as possible the length of drying in the fields. This goes as far as eliminating the drying completely. Therefore, the harvested plant is placed in the silo with all its quality. One has, therefore, to make sure this quality is maintained as much as possible.

Silage systems are expensive and difficult to make profitable, because one has to handle a very large volume of hay and improve greatly the quality of the harvested forage in order to decrease the quality of meal.

Fertilizers

Nitrogen fertilizers (34-0-0) will also have a very marked effect on the protein content of the forages while considerably increasing the yield. With this method we, therefore, gain on two sides: that of quantity and that of quality.

It can happen, on the other hand, that it may be more difficult to harvest dry hay if the yield is too high. Silage making, therefore, becomes necessary.

As can be seen, many methods can be utilized either independently or in combination. Thus it could be said that it could be relatively easy to go from a forage analysis of nine to 10 per cent crude protein to an analysis of 11 to 12 per cent if, for example, the hay was cut at a better stage, if a hay drier was used, and if different cultivars were also used.

This Month with the QWI

Annual Convention at Macdonald would not be complete without the traditional tea for Board members. Above left, Mrs. Daisy Henderson, QWI 2nd Vice President, chats with Mrs. Pauline Lloyd, who gives the tea assisted by faculty wives such as Mrs. Alice Jutras, above right, who is seen comparing notes on the Townships with Mrs. Ola Carr of Sutton. Below right, some members took advantage of the sunshine to enjoy tea on the grounds overlooking the lake.

SEMI-ANNUAL

The dates for the Semi-Annual Board Meeting have been changed to November 18 and 19.

Above left, Mrs. Mary Heatherington of East Angus, who graduated from Macdonald in 1919, received a bouquet of flowers from QWI President Mrs. Ina Kilgour in gratitude for playing the piano during Convention. The flowers, which were on the head table, were sent by Past President Miss Edna Smith. Mrs. Heatherington played many selections from the songbook compiled by Miss Hilda Graham to commemorate both her 70th birthday and the 70th Anniversary of QWI. Of the 1,000 books she had printed, she donated 150 to the QWI for use at Conventions. The songbooks may be ordered from Provincial Office at $1 per copy or $1.50 if postage is needed. (Cheques made payable to Hilda Graham). Mrs. Eldora Turner, also 70 for the 70th, sold recipes at 15 cents each and handed in $12.50 to help defray Convention expenses. First prize for the plain mitts to be knitted by a member 70 years of age or older was won by Mrs. Patrick Jones of Port Daniel.

surprised and delighted Miss Suzanne Auger receiving
n Honorary Membership in the QWI in recognition of the
nany years she worked with QWI. Mrs. Ina Kilgour made
ne presentation. Miss Auger, who was with the Quebec
epartment of Agriculture until her retirement, judged the
andicrafts at Convention. Many members also remember
er judging at local fairs — she recalled sampling 50
hocolate cakes one year at Richmond!

Above, Mme Yvette Dion from les Cercles des Fermières, centre, with Mrs. Gwen Parker, QWI 1st Vice President, and Miss Auger. Mme Dion told members that her group celebrated their 65th Anniversary in August 1980 with 1,200 in attendance They have 75,200 members with 68 per cent living in the country, of that 15 per cent on farms. She mentioned how her organization is working for the ACWW Convention which will be held in B.C.

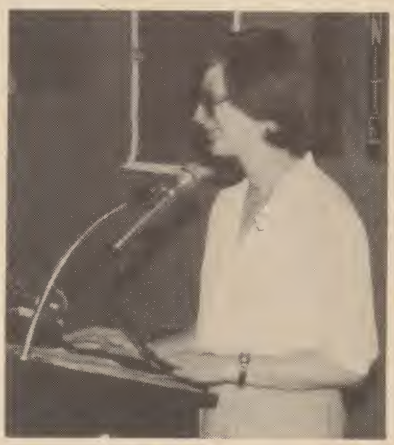
Hostesses such as Mrs. Anna Robinson, Gatineau County President, greeted membe as they arrived for meetings. Being greeted here is Mrs. Catherine Tarte of Belvidere.

Mrs. Anne Robertson, third from left, was in charge of the sales table and was very ably assisted by County Presidents Mrs. Marilyn Marchand, Abitibi, Mrs. Bert McGibbon, Argenteuil, and Mrs. Helen Shanks, Shefford.

Above, County Presidents Mrs. Ola Carr, Brome, and Mrs. Faye Coulman, Compton, exchange pleasantries and sell QWI spoons in this instance to Mrs. Mickie Povey of Belvidere. Sixty-seven spoons were sold during Convention and they still may be ordered from the Provincial Office. Left, The QWI book on Pioneer Women went on sale for the first time at Convention and close to 400 copies were sold by County Presidents Mrs. Elsie Prevost, Quebec, and Mrs Harold Robertson, Chateauguay-Huntingdon. Mrs. S. Bidner, a Missisquoi County member, examines a copy at left. Orders have been coming in well since Convention. The book sells for $4 75 or $5.00 if postage is necessary and may be ordered through the Provincial Office.

ach County President received a replica of the ACWW Flag which was to be taken back to the County to help publicize and promote ACWW. unty Presidents first row, left to right, Mrs. Bert McGibbon, Argenteuil, Mrs. Ola Carr, Brome, Mrs. Marilyn Marchand, Abitibi, Mrs. Faye ulman, Compton, Mrs. Grace Annett, Gaspe, Mrs. Anna Robinson, Gatineau. Second row, Mrs. Shirley Johnston, Richmond, Mrs. Harold bertson, Chateauguay-Huntingdon, Mrs. Flo Fallow, Bonaventure, Mrs. Esther Mason, Missisquoi, Mrs. Pauline Nutbrown, Megantic. Third w, Mrs. Violet Poole, Pontiac, Mrs. June Kelly, Baldwin-Cartier, Mrs. Isabel Manning (1st Vice, Montcalm), Mrs. Pansy Powell, Rouville, Fourth w, Mrs. Helen Shanks, Shefford, Mrs. Eslie Prevost, Quebec, Mrs. Rita Taylor, Stanstead, Mrs. Dorothy Marlin, Sherbrooke. Members from the agdalen Islands were unable to attend. Pictured collecting pennies for friendship — more than $100 — are Mrs. Rita Lewis, left, Quebec Area ce President to FWIC, and Mrs. Norma Rabb, right, Citizenship Convener.

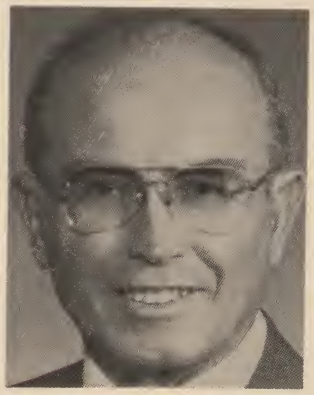
s Home Economics Convener Miss Viola Moranville was unable to be at Convention, Mrs. by Knights, Sutton, kindly undertook the handicraft duties. She is pictured here with the splay of rag dolls.



Miss Etta Comeau, Manager of Educational Services for J. & P. Coats, presented the awards to winners in the J. & P. Coats competition. Miss Comeau expressed her delight at the number of entries and in the quality of the work.

Wednesday afternoon was devoted to a tour of the Macdonald Farm. At top left, Mrs Aileen Lord, Ayer's Cliff, having completed her registration duties, joined the 172 members and some 11 visitors for the tour which included refreshments served in the Farm Centre, a short talk by Farm Director Rudi Dallenbach, guided tours by him and by Astrid Norguay of the Dairy Barn and of the Blacksmith's Museaum. Below left, Miss Hilda Graham, Mrs. Dorothy Marlin, and Mrs. Joyce Gilchrist, Education Convener, pose in front of the Museum which was built around 1820.

CIBA-GEIGY SEEDS ANNOUNCEMENT



ROBERT I. BRAWN, Ph.D.

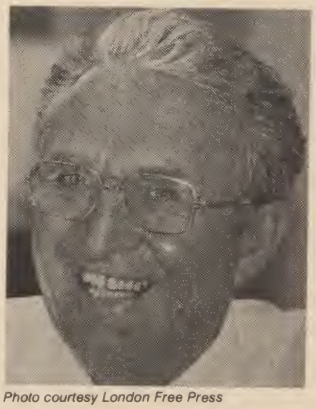


Photo courtesy London Free Press

GEORGE E. JONES, F.A.I.C.

Byron E. Beeler, Executive Vice President, Ciba-Geigy Seeds Ltd. is pleased to announce the appointment of Dr. Robert I. Brawn as Director of Research and Development.

Bob Brawn brings to Ciba-Geigy Seeds a wealth of corn breeding experience and in-depth knowledge of Canadian agriculture. His career spans a 21-year period in the Departments of Agronomy and Genetics at the Macdonald College of McGill University at Ste. Anne de Bellevue, Québec; followed by 10 years with Ciba-Geigy Seeds sister company, Funk Seeds International in Bloomington, Illinois, where he directed the Corn Breeding Program.

George E. Jones, former Director of Research and Development and a long-time Professor of Crop Science at the Ontario Agricultural College, University of Guelph, will now be devoting his considerable energies to the management of the family farming operations near Walkerton in Bruce County.

George Jones, well known and highly regarded all across Canada, has made tremendous contributions to the seed business, and is credited by many as the man who, more than any other, made corn the most important field crop in Ontario.

Ciba-Geigy Seeds Ltd. is a major Canadian seed company, breeding and marketing Funk and Stewart hybrid corn and Stewart cereal seeds nationally.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